REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 1 and 7 are currently being amended. The applicant has amended claim 1 to incorporate the features "each Visitor Location Register module in said Visitor Location Register has a Visitor Location Register module number for identification" and "said Visitor Location Register module number corresponding to the Visitor Location Register module that manages said mobile subscriber roaming number." The applicant has amended claim 7 to incorporate the features "each Visitor Location Register module in said Visitor Location Register has a Visitor Location Register module number for identification" and "said Visitor Location Register module number corresponding to the Visitor Location Register module that manages said mobile subscriber roaming number."

This amendment changes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1-10 are now pending in this application.

Claim Rejections under 35 USC §103

[Form 1]: The Office Action rejected claims 1, 4, 5, 7, 8 and 10 under 35 USC §103(a) as being anticipated by Applicant's Admitted Prior Art (hereinafter AAPA) in view of U.S. Patent No. 6,947,758 ("Nguyen"). In response, without agreeing or acquiescing to the rejection, Applicant has amended independent claims 1 and 7. Further, Applicant respectfully traverses the rejection for the reasons set forth below.

Applicant relies on MPEP § 2143.03, which requires that all words in a claim must be considered in judging the patentability of that claim against the prior art. Here, the cited references do not identically disclose, teach or suggest all the claim limitations. *See In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

As per claim 1:

The applicant has amended claim 1 incorporating the features "each Visitor Location Register module in said Visitor Location Register has a Visitor Location Register module number for identification" and "said Visitor Location Register module number corresponding to the Visitor Location Register module that manages said mobile subscriber roaming number" based on, at least in part, the last paragraph in Background of the Invention and the 7th paragraph in Summary of the Invention of specification of present invention.

Nguyen defines a relationship as below:

VLR unit	VLR-1	VLR-2	VLR-M
VLR unit No.	1	2	M
TMSI	TMSI-1~TMSI-Q	TMSI-(Q+1)~TMSI-R	TMSI-(R+1)~ TMSI-N
Tele No.(TN)	1st TN~ Qst TN	(Q+1)st TN ~ Rst TN	(R+1)st TN ~ Nst TN
Address of VLR site	TMSI-1 VLR~ TMSI-Q VLR	TMSI-(Q+1) VLR ~TMSI-R VLR	TMSI-(R+1) VLR ~ TMSI-N VLR

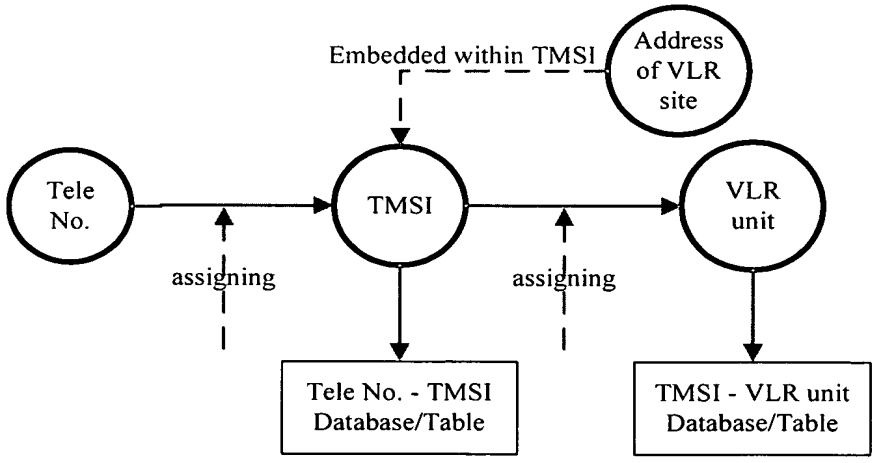
It is asserted in the final office action that Nguyen discloses "VLR 740 comprises a first VLR unit VLR-1 750, a second VLR unit VLR-2 760 ..... and an Mth VLR unit VLR-M 770. MSC 400 assigns a TMSI number to each telephone number. MSC 400 assigns a first telephone number with TMSI-1 715. MSC 400 continues the process and assigns the Nth telephone number with TMSI-N 715. MSC 400 embeds address information of a processing element (i.e. an address of a VLR site in one of the VLR units) into the TMSI number." (see col. 10, lines 7-14 and lines 32-44, and Fig. 7)

1) "A first portion of the TMSI numbers are assigned to VLR-1. The first portion of the TMSI numbers comprise numbers TMSI-1 through TMSI-Q.....A second portion of the TMSI numbers are assigned to VLR-2. The second portion of the TMSI numbers comprise numbers TMSI-(Q+1) through TMSI-R.....A final portion of the TMSI numbers are assigned to VLR-M. The final portion of the TMSI numbers comprise numbers TMSI-(R+1) through TMSI-N." (see col. 10, lines 45-57)

2) Based on "MSC assigns a TMSI number to each telephone number", it is implied that TMSI-1 can be assigned to the 1st telephone number and TMSI-N can be assigned to the Nst telephone number. Thus the 1st telephone number through Qst telephone number are corresponding to VLR-1, the (Q+1)st telephone number through Rst telephone number are corresponding to VLR-2, and the (R+1)st telephone number through Nst telephone number are corresponding to VLR-M.

3) Based on "MSC embeds address information of a processing element (i.e. an address of a VLR site in one of the VLR units) into the TMSI number", it is implied that TMSI-1 VLR, the address information in one of the VLR units, is embedded into TMSI-1 and TMSI-N VLR is embedded into TMSI-N. Thus the TMSI-1 VLR through TMSI-Q VLR are corresponding to VLR-1, the TMSI-(Q+1) VLR through TMSI-R VLR are corresponding to VLR-2, and the TMSI-(R+1) VLR through TMSI-N VLR are corresponding to VLR-M.

Based on the relationship established above, Nguyen discusses a TMSI distribution as below:



While Nguyen discloses "MSC assigns a TMSI number to each telephone number", Nguyen fails to discuss that TMSI is embedded or delivered within the telephone number, and it also fails to discuss how to access to a corresponding TMSI when receiving a cellular telephone call in detail. Thus it is implied that MSC is required to maintain a database or

table recording the correspondence relationship between TMSI and telephone number for access to a corresponding TMSI from a telephone number.

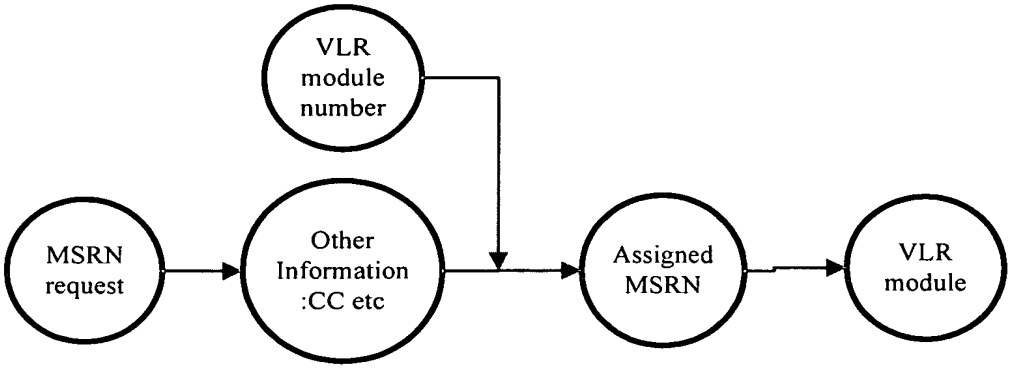
Similarly, Nguyen discloses "A first portion of the TMSI numbers are assigned to VLR-1. A second portion of the TMSI numbers are assigned to VLR-2. A final portion of the TMSI numbers are assigned to VLR-M" (see col. 10, lines 45-57), however, it fails to discuss that VLR unit number is embedded or delivered within the TMSI, and it also fails to discuss how to determine a corresponding VLR unit when obtaining the TMSI in detail. Thus it is implied that MSC is required to maintain a database or table recording the correspondence relationship between TMSI and VLR unit number for determining a corresponding VLR unit from a TMSI.

Claim 1 defines a relationship as below:

VLR module	VLR-1	VLR-2	VLR-M
VLR module No. (added into MSRN)	01	02	M
MSRN	MSRN-1 ~ MSRN-Q	MSRN-(Q+1) ~ MSRN-R	MSRN-(R+1) ~ MSRN-N

The MSRN-1 through MSRN-Q correspond to VLR-1, the MSRN-(Q+1) through MSRN-R correspond to VLR-2, and the MSRN-(R+1) through MSRN-N correspond to VLR-M. Each Visitor Location Register module has a Visitor Location Register module number, such as 01, 02 and M, which is used for identifying the different VLRs as VLR-1, VLR-2 and VLR-M.

Based on the features above, claim 1 discusses a MSRN distribution as below:



As shown, in claim 1 there is provided a manner by adding the VLR module number to MSRN. When VMSC receives a MSRN request, VMSC will assign a MSRN which comprises said VLR module number corresponding to the VLR module that manages said MSRN; and said VLR module number is utilized to directly determine the correspondence relationship between said assigned MSRN and the VLR module that manages said MSRN.

Therefore, the differences between Nguyen and claim 1 include at least the following:

a) TMSI-1 ~ TMSI-N represents a telephone number; VLR module number represents the address of VLR module. Accordingly, TMSI-1 ~ TMSI-N in Nguyen is not analogous to VLR module number claimed in claim 1.

b) Nguyen fails to disclose assigning said MSRN which comprises said VLR module number.

c) Nguyen fails to disclose a VLR module number corresponding to the Visitor Location Register module that manages said mobile subscriber roaming number and is utilized to directly determine the correspondence relationship between said assigned mobile subscriber roaming number and the Visitor Location Register module in said Visitor Location Register that manages said mobile subscriber roaming number.

Based on (a), (b) and (c) above, applicant submits that application of TMSI-1 ~ TMSI-N as discussed in Nguyen does not disclose teach or suggest a VLR module number as claimed.

As for applying the TMSI number as VLR module number in TMSI: as the skilled persons in the field know, it is up to 4 bytes in TMSI. In Nguyen assuming that all the 4 bytes is used by TMSI number, for each telephone number is assigned a TMSI number, it can merely represent up to 10,000 subscribers by applying the TMSI number in TMSI.

As for applying the TMSI number as a VLR module number in MSRN: the length of the whole MSRN in the above is 15 bytes (digits), CC, NDC and MSC code will occupy most of the 15 bytes, thus the availability left is limited. Generally, it may be 2 bytes and up to 99 objects (number segment is 01-99) can be in operation at this time. Assuming that the 2 bytes are used by a TMSI number, for each telephone number is assigned a TMSI number, it can represent up to 99 subscribers by applying the TMSI number in MSRN.

Obviously, as the number of subscribers continues to grow, the number of subscribers for VLR may be far more than 100,000 subscribers. Accordingly, either applying the TMSI number in MSRN or TMSI never possesses practical utility and cannot resolve the technical problem that assigning a mobile subscriber roaming number is not suitable for large quantities of subscribers, much less for a MSC/VLR with large capacity.

However, in the method of claim 1, when 2 bytes are used by a VLR module number, for each VLR module can be assigned lots of subscribers, up to 99 VLR modules can represent a large quantity of subscribers by applying the VLR module number in MSRN. That is the purpose of the method of claim 1 is to resolve the technical problem that the existing method for assigning a mobile subscriber roaming number is not suitable for a MSC/VLR with large capacity.

d) It is thus evident that in Nguyen it's required to maintain databases or tables in MSC side. Relatively, in claim 1 of present invention, assigning said MSRN which comprises said VLR module number.

In Nguyen, along with the subscribers coming to considerable quantities, the number of TMSI must be huge. Thus the scale of telephone number – TMSI database or table and TMSI - VLR unit number database or table will be larger. Thus Nguyen cannot offer a technical solution to several technical problems. That is, the capacity and backup and recovery of the database or table will be a problem and thereby it realizes very poor capacity expansion.

According to the method of claim 1, when a VLR module needs to be added or when a VLR module needs to be removed due to failure, as long as the module number of other VLR modules are not changed, there won't be any influence to other VLR modules, thus, simple fragmentation management is eliminated, efficiency is improved and smooth capacity expansion and maintenance of a VLR can be realized, while the reliability and stability of the system is improved.

Further, AAPA fails to cure the deficiencies of Nguyen. Moreover, the combination of AAPA and Nguyen cannot solve the technical problems described above.

The applicant submits that the combination of AAPA and Nguyen can not serve as the basis on which technical teaching is brought to the technical solution of amended claim 1 in the present invention. A person having ordinary skill in the art can not obtain the technical solution of amended claim 1 in the present invention without creative work. Therefore, claim 1 of the present invention is non-obvious compared to the combination of AAPA and Nguyen, and conforms to 35 USC §103(a).

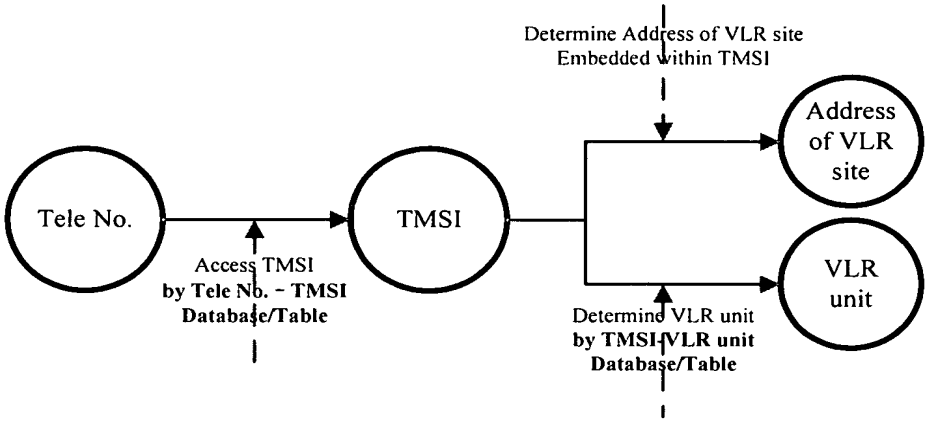
As per claim 7:

Nguyen defines a relationship as below:

VLR unit	VLR-1	VLR-2	VLR-M
VLR unit No.	1	2	M
TMSI	TMSI-1~TMSI-Q	TMSI-(Q+1)~TMSI-R	TMSI-(R+1)~ TMSI-N
Tele No.(TN)	1st TN~ Qst TN	(Q+1)st TN ~ Rst TN	(R+1)st TN ~ Nst TN
Address of	TMSI-1 VLR~	TMSI-(Q+1) VLR	TMSI-(R+1) VLR

VLR site	TMSI-Q VLR	~TMSI-R VLR	~ TMSI-N VLR

Based on the relationship established above, Nguyen discusses a MSRN searching process as below:



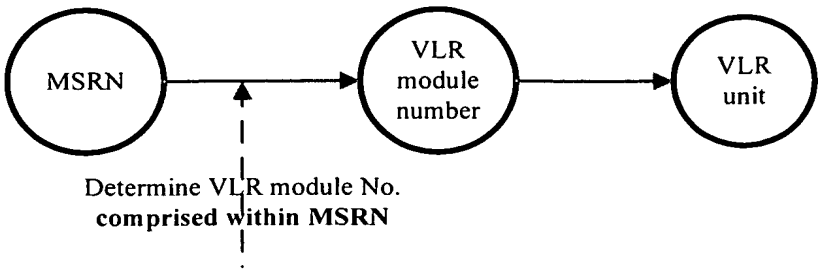
Obviously, Nguyen fails to discuss that a TMSI is embedded or delivered within the telephone number. Thus, when an MSC receives a cellular telephone call (obtain a telephone number), it is implied that the MSC must access a corresponding TMSI based on a database or table recording the correspondence relationship between TMSI and telephone number.

Similarly, Nguyen fails to discuss that a VLR unit number is embedded or delivered within the TMSI. Thus, when an MSC accesses the corresponding TMSI, it is implied that MSC must determine the corresponding VLR unit based on a database or table recording the correspondence relationship between TMSI and VLR unit number.

Claim 7 defines a relationship as below:

VLR module	VLR-1	VLR-2	VLR-M
VLR module No. (added into MSRN)	01	02	M
MSRN	MSRN-1 ~ MSRN-Q	MSRN-(Q+1) ~ MSRN-R	MSRN-(R+1) ~ MSRN-N

Based on the features above, claim 7 discusses a MSRN distribution as shown below:



Nguyen disclosed that "MSC receives a cellular telephone call from a first user and the call has a temporary identification number of TMSI-2. MSC can immediately determine that TMSI-2 is within VLR-1 750 and can immediately access the TMSI-1 VLR site within VLR-1 750 from the address offset information embedded within TMSI-2."

Accordingly, the differences between Nguyen and the method claimed in claim 7 of present invention are at least as follows:

a) TMSI-1 ~ TMSI-N represent the telephone number; the VLR module number represents the address of VLR module. However, TMSI-1 ~ TMSI-N in Nguyen is not analogous to the VLR module number claimed in claim 7.

b) Nguyen fails to disclose assigning said MSRN which comprises said VLR module number.

c) Nguyen fails to disclose a VLR module number corresponding to the Visitor Location Register module that manages said mobile subscriber roaming number and is used to directly determine the correspondence relationship between said assigned mobile subscriber roaming number and the Visitor Location Register module in said Visitor Location Register that manages said mobile subscriber roaming number.

d) It is thus evident that in Nguyen it's required to maintain databases or tables in MSC side. In contrast, the method of claim 7 assigns a MSRN which comprises said VLR module number.

It is thus evident that Nguyen is required to maintain databases or tables in the MSC side. In the whole process of a cellular telephone call accessing the right VLR unit, the MSC must carry out twice translation, from telephone number to TMSI and from TMSI to VLR unit in Nguyen. Obviously, the twice translation results in an operation of low efficiency and resource waste.

Furthermore, along with the subscribers coming to considerable quantities, the number of the TMSI must be huge. Thus the scale of the telephone number – TMSI database or table and TMSI - VLR unit number database or table will be larger. Meanwhile, searching the database or table will be difficult, especially the telephone number - TMSI database or table. Access to the TMSI and determination of the VLR unit will be less efficient. Finally, the capacity and backup and recovery of the database or table will be a bottleneck.

According to the method claimed in claim 7, when a VLR module needs to be added or when a VLR module needs to be removed due to failure, as long as the module number of other VLR modules are not changed, there won't be any influence to other VLR modules, thus, simple fragmentation management is eliminated, efficiency is improved and smooth capacity expansion and maintenance of a VLR can be realized, while the reliability and stability of the system is improved.

AAPA fails to cure the deficiencies of Nguyen. Moreover, the combination of AAPA and Nguyen cannot solve the technical problems described above.

The applicant submits that the combination of AAPA and Nguyen can not serve as the basis on which technical teaching is brought to the technical solution of amended claim 7 in the present invention. A person having ordinary skill in the art can not obtain the technical solution of amended claim 7 in the present invention without creative work. Therefore, claim 7 of the present invention is non-obvious compared to the combination of AAPA and Nguyen, and conforms to 35 USC §103(a).

Per claims 4-5, 8 and 10:

As stated above, the cited references fail to disclose, teach or suggest each and every element of amended independent claims 1 and 7. Claims 4, 5, 8 and 10 depend from one of independent claims 1 or 7 and should be allowed for the reasons set forth above without regard to further patentable limitations contained therein.

[Form 2]: Claims 2, 3 and 9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nguyen in view of AAPA and in further view of U.S. Patent No. 6,148,200 ("Lahtinen"). As set forth above, Nguyen and AAPA fail to disclose, teach or suggest each and every limitation of independent claims 1 and 7. Claims 2, 3 and 9 depend from one of independent claims 1 or 7 and should be allowed for the reasons set forth above without regard to further patentable limitations contained therein. Further, Lahtinen fails to cure the deficiencies of Nguyen and AAPA. Accordingly, Applicant requests that the rejection be withdrawn.

[Form 3]: Claim 6 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Nguyen in view of AAPA and in further view of U.S. Patent No. 6,039,624 ("Holmes"). As set forth above, Nguyen and AAPA fail to disclose, teach or suggest each and every limitation of independent claims 1 and 7. Claim 6 depends from independent claim 1 and should be allowed for the reasons set forth above without regard to further patentable limitations contained therein. Further, Holmes fails to cure the deficiencies of Nguyen and AAPA. Accordingly, Applicant requests that the rejection be withdrawn.

Conclusion

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

If there is still a problem that the Examiner believes is not overcome by the above amendments and statement of opinions, please give the Applicants another chance to make amendments and further clarification or explanation or observation. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date 6/22/08

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